

# Divide-Couple-Recombine(DCR) Combinatorial Synthesis

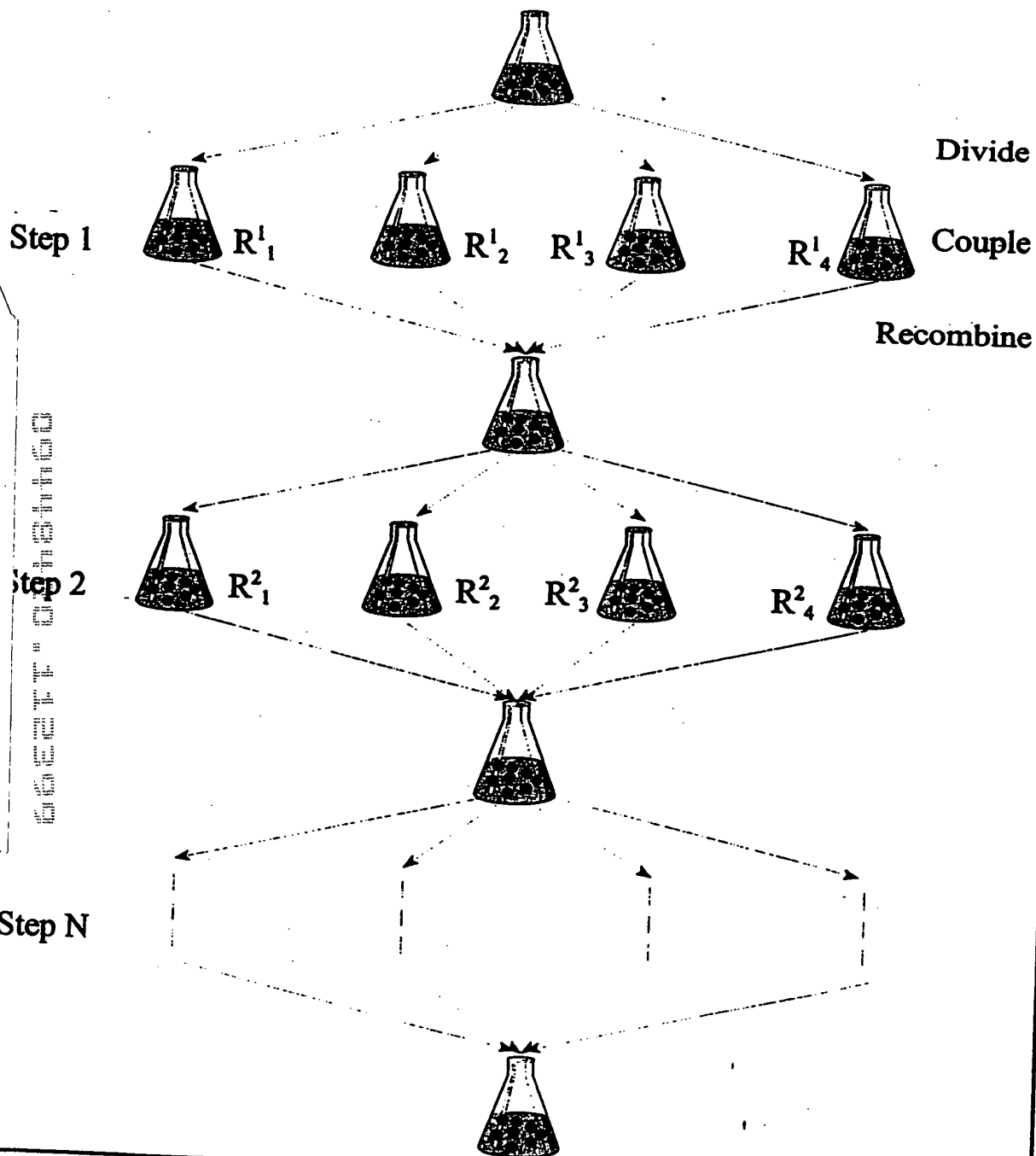


FIGURE 1

# Labeling of Synthesis Beads with Chemical Tags

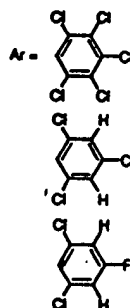
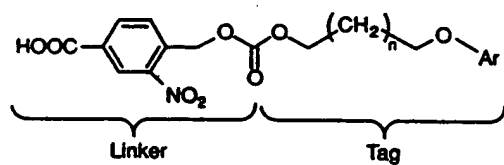
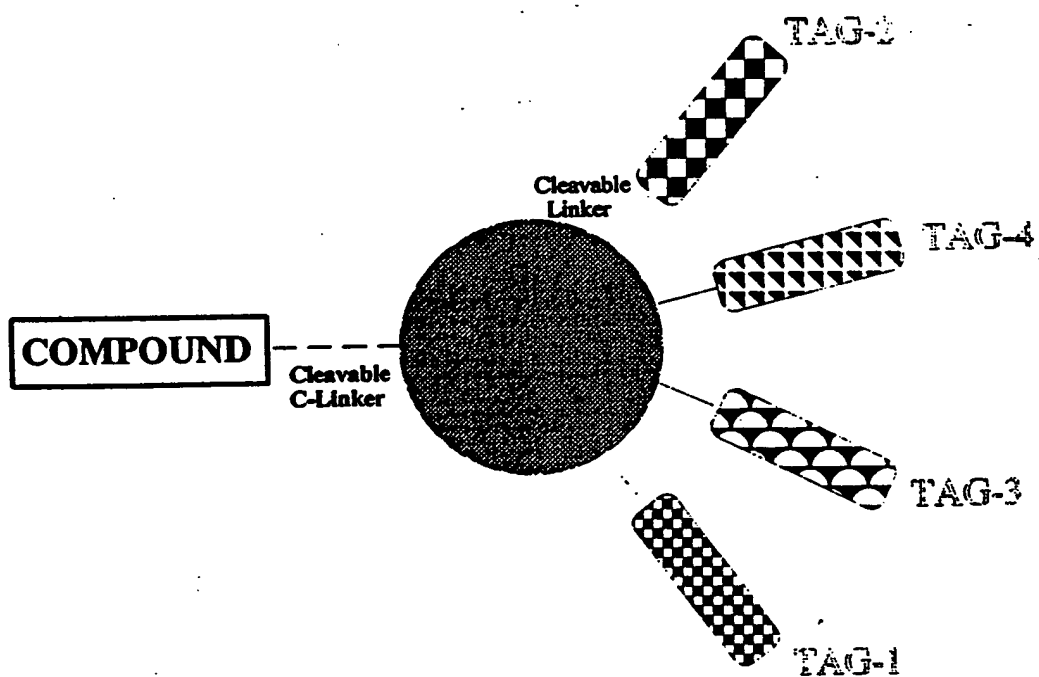
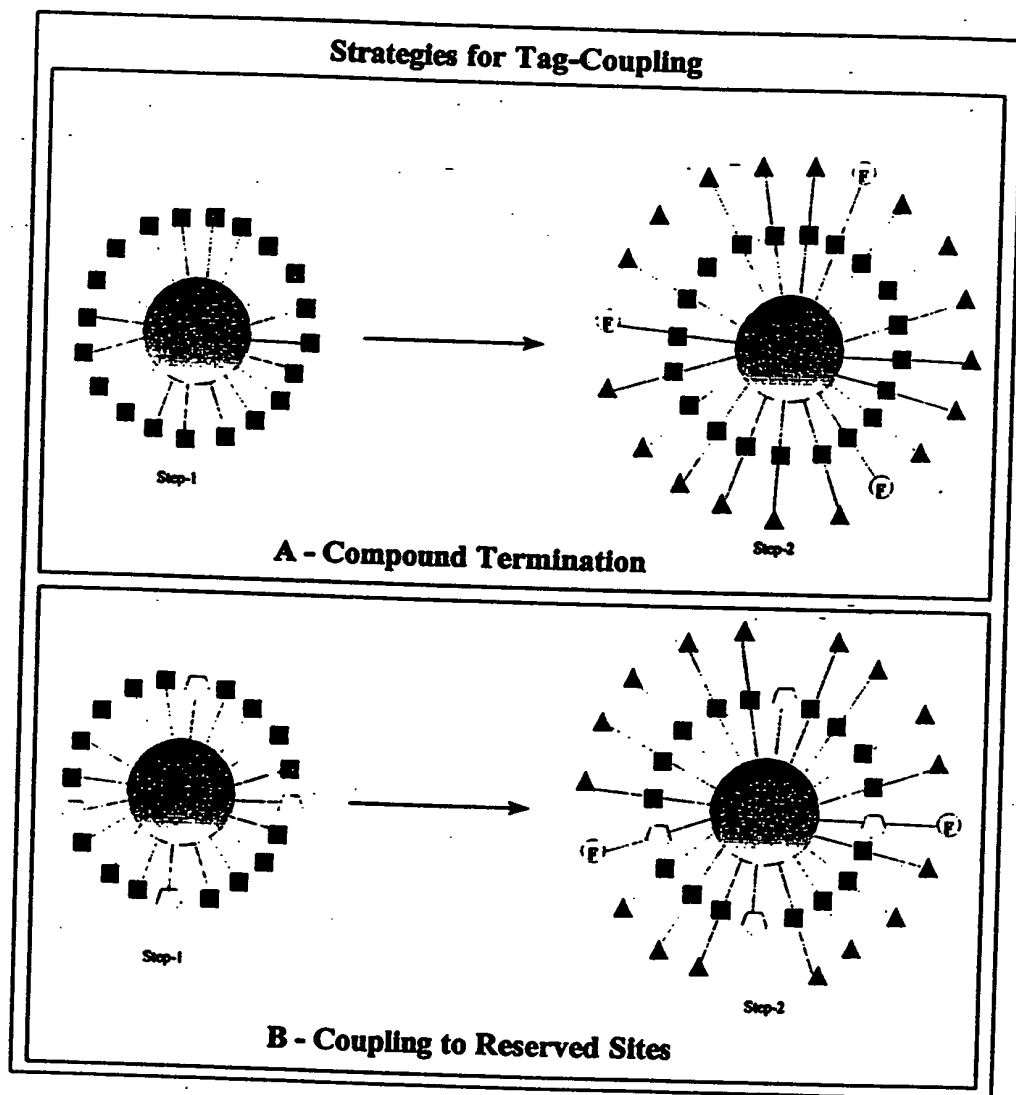


FIGURE 2

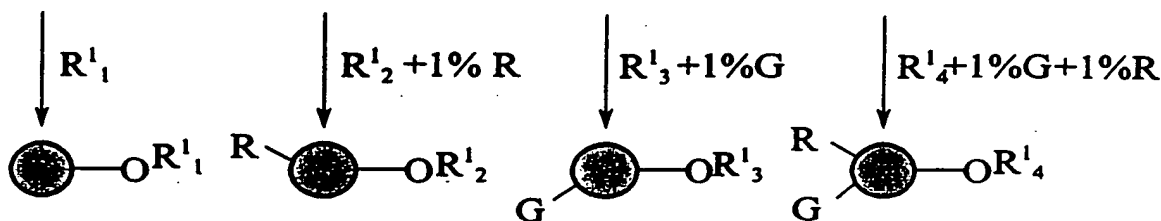


**FIGURE 3**

**Step 1: Divide beads into 4 groups**

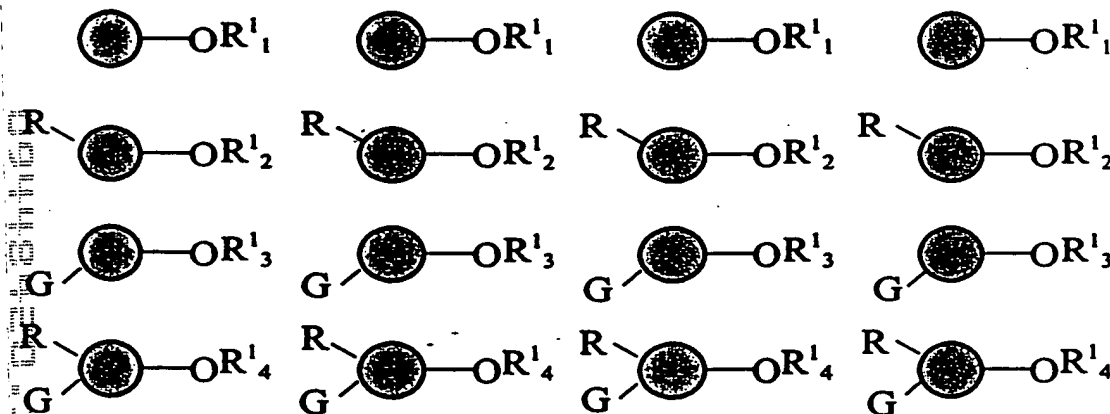


**Couple with first set of amino acids and color labels**

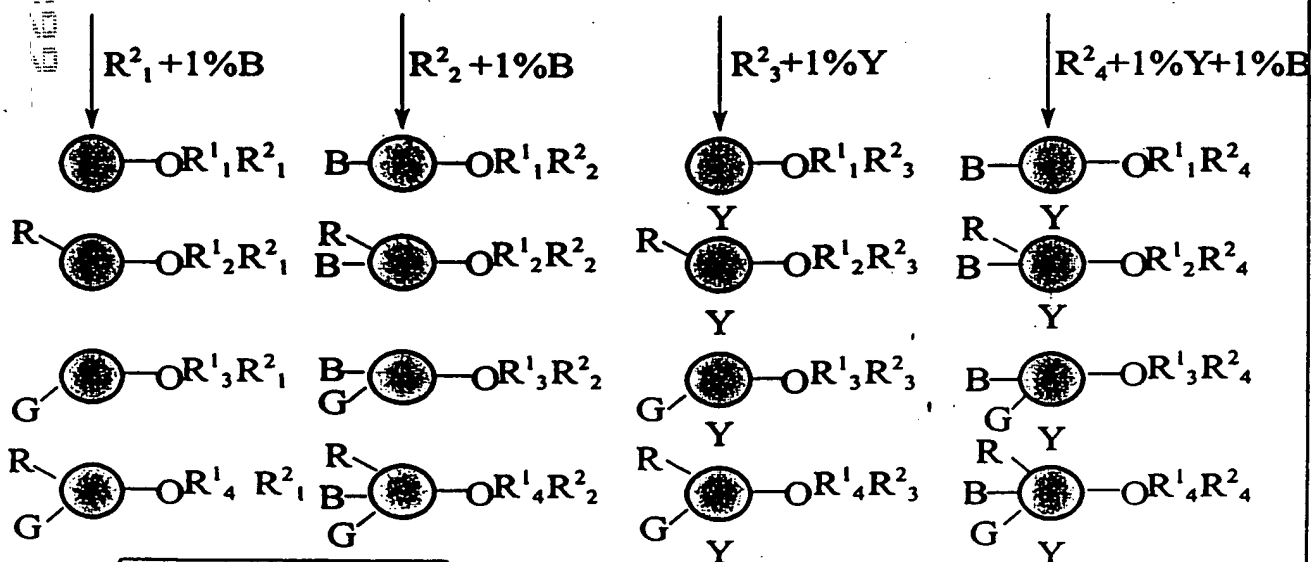


**Recombine beads**

**Step 2: Divide beads into 4 groups**



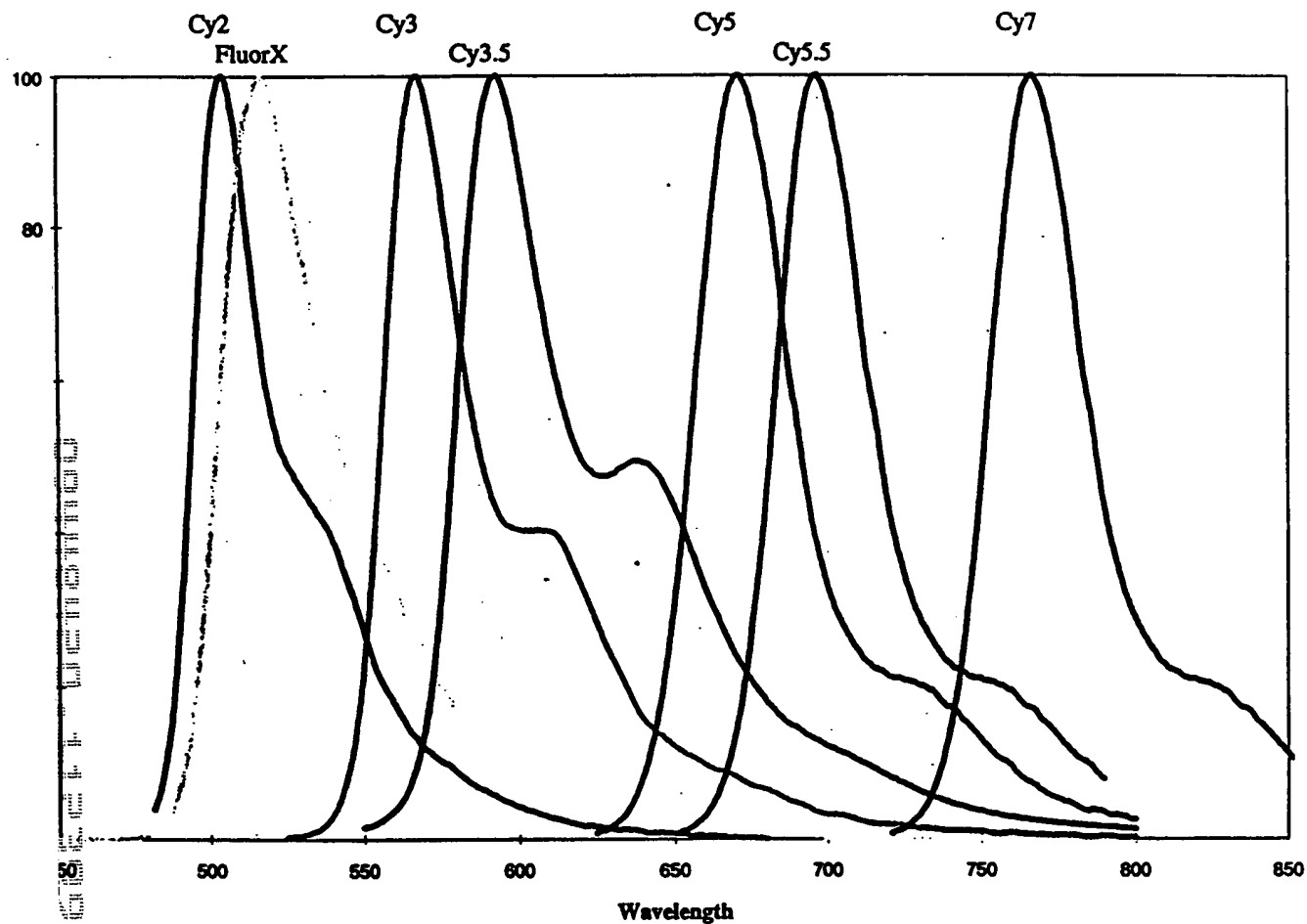
**Couple with second set of amino acids and color labels**



**R combine beads**

FIGURE 4

## Emission Spectra of the CyDye Fluorescent Dyes



Fluorophore	Color Of Fluorescence	Absorption Maximum (nm)	Fluorescence Maximum (nm)	Extinction Coefficient ( $M^{-1}cm^{-1}$ )	Quantum Yield for protein conjugates	Formula Weight (daltons)	
						Bisfnc.	Monofnc.
Cy2	Green	489 nm	506 nm	~ 150,000	>0.12	896.95	713.78
Cy3	Orange	550 nm	570 nm	150,000	>0.15	949.11	765.95
Cy3.5	Scarlet	581 nm	596 nm	150,000	>0.15	1285.54	1102.37
Cy5	Far-Red	649 nm	670 nm	250,000	>0.28	975.15	791.99
Cy5.5	Near IR	675 nm	694 nm	250,000	>0.28	1311.58	1128.41
Cy7	Near IR	743 nm	767 nm	~ 250,000	~ 0.28	1001.19	818.02
FluorX	Green	494 nm	520 nm	68,000	0.3		586.6

**FIGURE 5**

# Multi-Agent Diagnostic Assay In Bead-Array Format



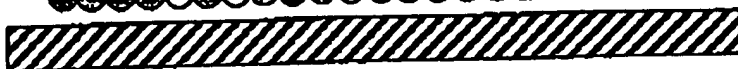
Transparent Cover



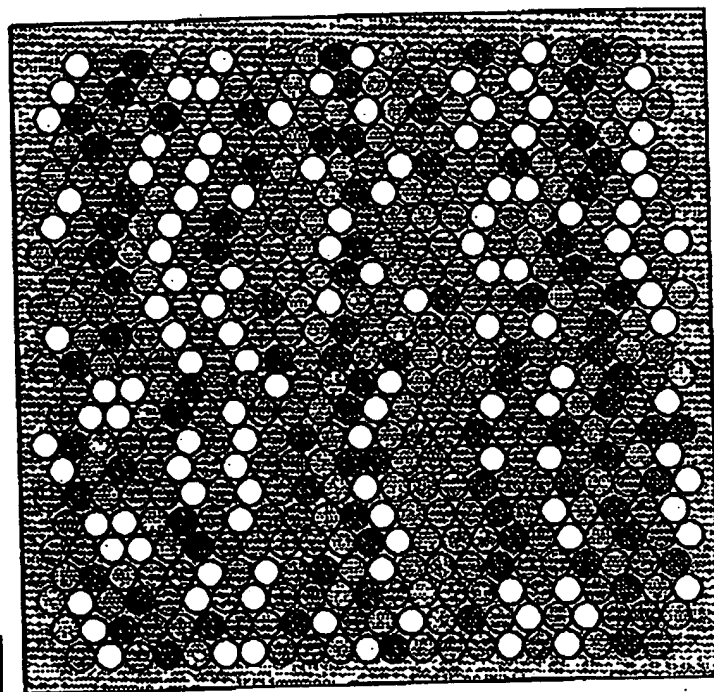
Beads in Buffer

Planar Substrate

Side View



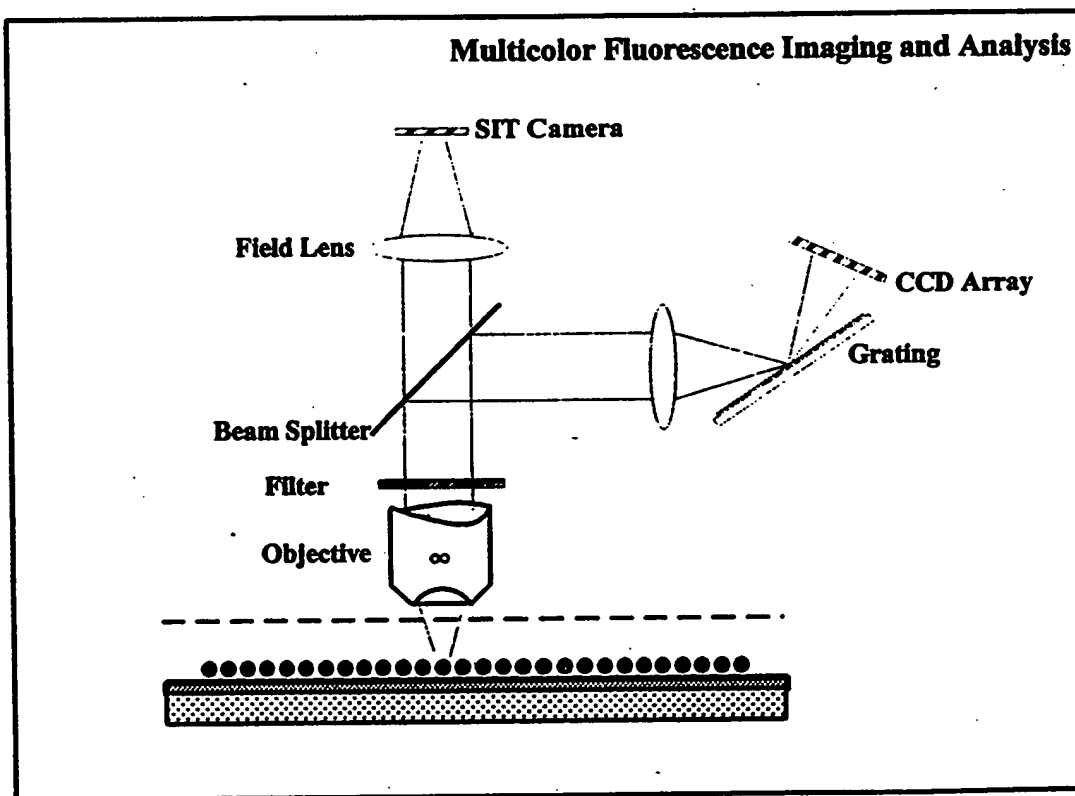
Not to Scale



RandomBead  
Array (5 Colors)

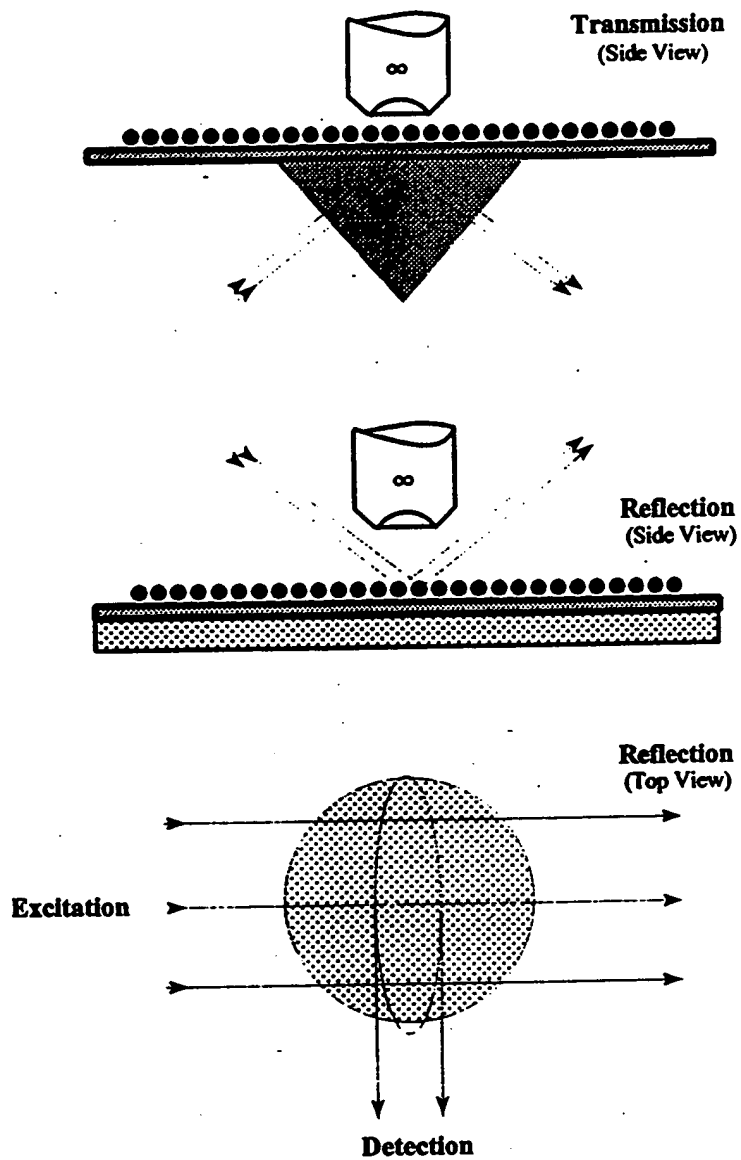
Top View

FIGURE 6



**FIGURE 7**

# Multicolor Fluorescence Imaging and Analysis



**FIGURE 8**

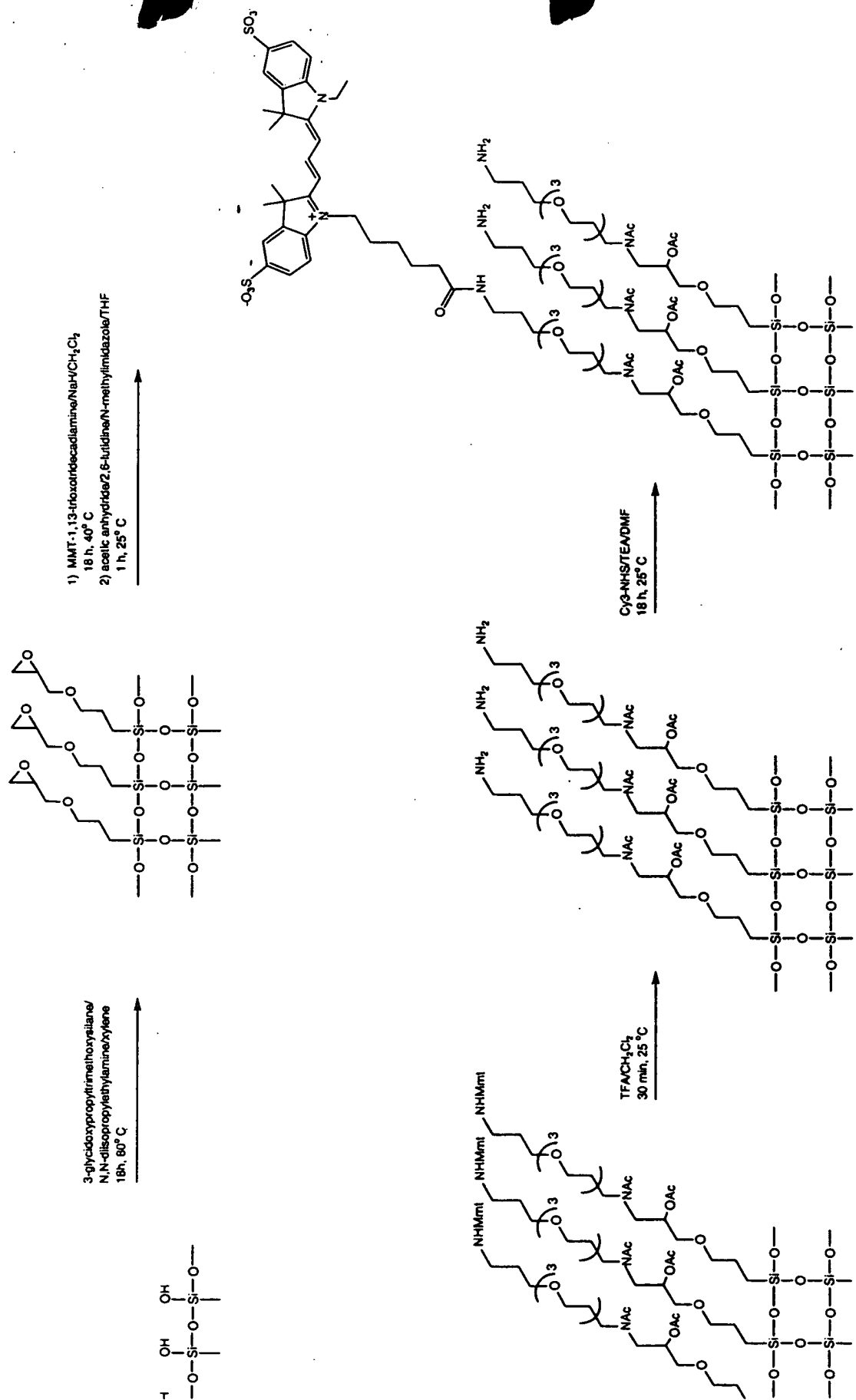


FIGURE 9